U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Bidens campylotheca* ssp. *waihoiensis*

COMMON NAME: Ko'oko'olau

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: July 2005

STATUS/ACTION:

___ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status

___ New candidate

__X_ Continuing candidate

___ Non-petitioned

_X__ Petitioned - Date petition received: May 11, 2004

__ 90-day positive - FR date:

_X_ 12-month warranted but precluded - FR date: May 11, 2005

_N_ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

a. Is listing warranted (if yes, see summary of threats below)? yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded. We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions. During the past 12 months, most of our national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov).

_X__ Listing priority change

Former LP: _3__

New LP: _6__

Date when the species first became a Candidate (as currently defined): 1997

___ Candidate removal: Former LP: __

___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or

continuance of candidate status.

___U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

___ F – Range is no longer a U.S. territory.

___ I – Insufficient information exists on biological vulnerability and threats to support listing.

___ M – Taxon mistakenly included in past notice of review.

___ N – Taxon does not meet the Act's definition of "species."

___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering plants, Asteraceae (Sunflower family)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Maui

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Maui

LAND OWNERSHIP: State lands.

LEAD REGION CONTACT: Paul Phifer, 503-872-2823, paul_phifer@fws.gov

LEAD FIELD OFFICE CONTACT: Pacific Islands Fish and Wildlife Office, Christa Russell, 808-792-9400, christa_russell@fws.gov

BIOLOGICAL INFORMATION:

Species Description *Bidens campylotheca* ssp. *waihoiensis* is an erect, perennial herb 0.7 to 4 meters (m) (2.3 to 13 feet (ft)) tall, with sprawling horizontal lateral branches. The flower heads are panicles or compound cymes, and the corollas are yellow. The leaves are tripinnatifid or bipinnate, with 5 to 9 leaflets dissected into linear segments 0.4 to 1.5 centimeters (0.2 to 0.6 inches (in)) wide. Achenes are straight or slightly curved, undulate winged, 12 to 17 millimeters (mm)(0.5 to 0.7 in) long, and 1.5 to 2 mm (0.06 to 0.08 in) wide (Ganders and Nagata 1999).

Taxonomy *Bidens campylotheca* ssp. *waihoiensis* was described by St. John *et al*. (1983). This subspecies is recognized as a distinct taxon in Ganders and Nagata (1999) and Wagner and Herbst (2003), the most recently accepted Hawaiian plant taxonomy.

Habitat *Bidens campylotheca* ssp. *waihoiensis* is found in wet *Acacia-Metrosideros* forest, along stream banks, with the associated species *Broussaisia arguta, Cheirodendron trigynum, Cibotium* sp., *Dicranopteris linearis, Dubautia* sp., *Freycinetia arborea, Perrottetia sandwicensis*, and *Rubus hawaiiensis*, and elevations between 945 and 1,219 m (3,100 and 4,000 ft) (Hawaii Natural Heritage Program Database 2004).

Historical and Current Range/Current Status This subspecies is known from one population of

200 individuals, restricted to the island of Maui (Robert Hobdy of the Hawaii Division of Forestry and Wildlife and Arthur C. Medieros III, U.S.G.S. Biological Resources Discipline, pers. comms. 1995). While we do not know of any surveys since this information was provided, it is reasonable to assume the population has continued to decline, since not all of the threats are being managed throughout its historical range.

THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range.
This subspecies is highly threatened by cattle (*Bos taurus*), that degrade and destroy habitat (R. Hobdy and A. Medieros, pers. comms. 1995). Cattle, the wild progenitor of which was native to Europe, northern Africa, and southwestern Asia, were introduced to the Hawaiian Islands in 1793. Large feral herds developed as a result of restrictions on killing cattle decreed by King Kamehameha I. While small cattle ranches were developed on Kauai, Oahu, and West Maui, very large ranches of tens of thousands of acres were created on east Maui and Hawaii. Much of the land used in these private enterprises was leased from the State or was privately owned and classified as Forest Reserve and/or Conservation District land. Cattle eat native vegetation, trample roots and seedlings, cause erosion, create disturbed areas into which alien plants invade, and spread seeds of alien plants in their feces and on their bodies. The forest in areas grazed by cattle becomes degraded to grassland pasture, and plant cover is reduced for many years following removal of cattle from an area. Several alien grasses and legumes purposely introduced for cattle forage have become invasive, noxious weeds that out-compete and replace native plants (Tomich 1986; Cuddihy and Stone 1990; Wagner *et al*. 1999a). Cattle have been fenced out of the one population of this taxon; however, without continued monitoring and maintenance of those fences, cattle from surrounding pasture areas can easily access fenced areas.

B. Overutilization for commercial, recreational, scientific, or educational purposes.
None known.

C. Disease or predation.
Disease is not known to be a significant threat. This subspecies is threatened by cattle that browse the leaves of plants (R. Hobdy and A. Medieros, pers. comms. 1995). See factor "A" above.

D. The inadequacy of existing regulatory mechanisms.
Hunting of feral cattle, the primary threat to this species, is no longer allowed in Hawaii (Hawaii Department of Land and Natural Resources 1985) except under permitted conditions. Cattle have been fenced out of the one population of this taxon; however, without continued monitoring and maintenance of those fences, cattle from surrounding pasture areas can easily access fenced areas.

E. Other natural or manmade factors affecting its continued existence.
With only one remaining population of about 200 individuals, reduced reproductive vigor and extinction due to stochastic events such as hurricanes, landslides, or floods are major threats (R. Hobdy and A. Medieros, pers. comms. 1995). In addition, taxa like the *Bidens campylotheca*

ssp. *waihoiensis* that are endemic to single small islands are inherently more vulnerable to extinction than widespread species because of the higher risks posed to a single population by genetic bottlenecks, random demographic fluctuations and localized catastrophes such as hurricanes and disease outbreaks. When considered on their own, the natural processes associated with being a single island endemic and the habitat perturbation caused by hurricanes do not affect *Bidens campylotheca* ssp. *waihoiensis* to such a degree that it is threatened or endangered with extinction in the foreseeable future, but these natural processes can exacerbate the threat from anthropogenic factors, such as predation by alien species.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

The East Maui Watershed Partnership, a non-governmental, non-profit partnership composed of east Maui landowners and managers, received funding from the Service in 2005 to continue fencing a 100,000 acre area to exclude feral ungulates and control nonnative plants (University of Hawaii 2005).

SUMMARY OF THREATS

The two major threats to this species include feral cattle, which are believed to be a major cause of the decline of this species throughout its range, and stochastic events to the one remaining population. Feral cattle have been fenced out of the one known population where this taxon currently occurs, but the fences must be continually maintained to prevent incursion.

SUMMARY OF REASONS FOR ADDITION, REMOVAL OR LISTING PRIORITY CHANGE

The listing priority number is being changed from 3 to 6 because the area in which all individuals of this species are currently found is fenced and cattle have been removed. Therefore, the threats of habitat degradation and destruction, and predation by feral cattle are non-imminent since they are not currently occurring. In order to prevent future incursion of the fenced areas by feral cattle, the fences must be continually surveyed and maintained. Should the integrity of the fences be compromised, the LPN for *Bidens campylotheca* ssp. *waihoiensis* will be reevaluated.

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	**6***
Moderate to Low	Imminent	Monotypic genus	7
		Species	8

	Non-imminent	Subspecies/population Monotypic genus Species Subspecies/population	9 10 11 12

Rationale for listing priority number:
Magnitude:
This subspecies is highly threatened by cattle that degrade and destroy habitat. Threats to the wet forest habitat of *Bidens campylotheca* ssp. *waihoiensis* and to individuals of this subspecies occur throughout its range, and are expected to continue or increase without control or eradication. Cattle have been fenced out of the one population of this taxon; however, without continued monitoring and maintenance of those fences, cattle from surrounding pasture areas can easily access fenced areas. The low numbers of individuals and limited range also increase the extinction risk to this subspecies from the existing threats and stochastic events.

Imminence:
Threats to *Bidens campylotheca* ssp. *waihoiensis* from cattle are non-imminent because they have been fenced out of the one population of this taxon. However, in order to prevent future incursion of the fenced area by cattle, the fences must be continually maintained. Should the integrity of the fences be compromised, the LPN for *B. campylotheca* ssp. *waihoiensis* will be reevaluated. In addition, the risk of extinction to this species from stochastic events is imminent due the low number of individuals in only one population.

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No. *Bidens campylotheca* ssp. *waihoiensis* does not appear to be appropriate for emergency listing at this time because the immediacy of the threats is not so great as to imperil a significant proportion of the taxon within the time frame of the routine listing process. If it becomes apparent that the routine listing process is not sufficient to prevent large losses that may result in this subspecies' extinction, then the emergency rule process for this subspecies will be initiated. We will continue to monitor the status of *B. campylotheca* ssp. *waihoiensis* as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

DESCRIPTION OF MONITORING:
Much of the information in this form is based on the results of two meetings of 20 botanical experts held by the Center for Plant Conservation in December of 1995 and 1999 and was updated from information through personal communication with Arthur C. Medieros III of the U.S.G.S. Biological Resources Discipline and Robert Hobdy of the Hawaii Division of Forestry and Wildlife in 1995. We have incorporated additional information on this subspecies from our files and the most recent supplement to the *Manual of the Flowering Plants of Hawaii* (Wagner and Herbst 2003). In 2004 the Pacific Islands office contacted the following species experts: Bob Hobdy, retired from Hawaii Division of Forestry and Wildlife; Joel Lau, the Hawaii Natural Heritage Program; Art Medeiros, the U.S.G.S. Biological Resources Discipline; Hank

Oppenheimer, resource manager for Maui Land and Pineapple Company and Steve Perlman and Ken Wood, National Tropical Botanical Garden. No new survey information or information on status or threats was provided in 2004. In 2005 we contacted the species experts listed below, but received no new information on this taxon.

The Hawaii Natural Heritage Program added this subspecies to their list as critically imperiled (Hawaii Natural Heritage Program Database 2004). Based on the International Union for Conservation of Nature and Natural Resources Red Plant Data Book rarity categories, this subspecies is recognized as Rare (could be considered at risk) by Wagner *et al.* (1999b).

Species experts were contacted but did not provide new information this year, no new literature was found, and no known entities are studying this subspecies. However, it is highly likely that the previously reported threats continue to impact the subspecies at the same or an increased level.

COORDINATION WITH STATES

In October 2004 we provided the Hawaii Division of Forestry and Wildlife with copies of our most recent candidate assessments for their review and comment. Vickie Caraway, the State botanist, reviewed the information for this species and provided no additional information or corrections (V. Caraway, pers. comm. 2005).

LITERATURE CITED and Other REFERENCES

List all experts contacted:

Name	Date	Place of Employment
1. Joel Lau	June 28, 2005	Hawaii Natural Heritage Program
2. Art Medeiros	June 28, 2005	U.S.G.S. Biological Resources Discipline
3. Jim Jacobi	June 28, 2005	U.S.G.S. Biological Resources Discipline
4. Rick Warshauer	June 28, 2005	U.S.G.S. Biological Resources Discipline
5. Hank Oppenheimer	June 28, 2005	Maui Land and Pineapple Company
6. Kapua Kawelo	June 28, 2005	U.S. Army
7. Dave Lorence	June 28, 2005	National Tropical Botanical Garden
8. Steve Perlman	June 28, 2005	National Tropical Botanical Garden
9. Ken Wood	June 28, 2005	National Tropical Botanical Garden
10. Marie Bruegmann	July 13, 2005	U.S. Fish and Wildlife Service
11. Vickie Caraway	June 14, 2005	Hawaii Division of Forestry and Wildlife

List all databases searched:

Name	Date
1. Hawaii Natural Heritage Program	2004

Other resources utilized:

Center for Biological Diversity, Dr. Jane Goodall, Dr. E.O. Wilson, Dr. Paul Ehrlich, Dr. John Terborgh, Dr. Niles Eldridge, Dr. Thomas Eisner, Dr. Robert Hass, Barbara Kingsolver, Charles Bowden, Martin Sheen, the Xerces Society, and the Biodiversity Conservation Alliance. 2004. Hawaiian Plants: petitions to list as federally endangered species. May 4, 2004.

Cuddihy, L.W., and C.P. Stone. 1990. Alteration of native Hawaiian vegetation; effects of humans, their activities and introductions. Coop. Natl. Park Resources Stud. Unit, Hawaii. 138 pp.

Ganders, F.R. and K.M. Nagata. 1999. *Bidens*: *In* Wagner, W.L., D.R. Herbst, and S.H. Sohmer, Manual of the Flowering Plants of Hawai`i. University of Hawaii Press and Bishop Museum Press, Honolulu. Bishop Mus. Spec. Publ. 97: 267-283.

Hawaii, Department of Land and Natural Resources. 1985. Hunting in Hawaii, fourth revision. Division of Forestry and Wildlife, Honolulu, 32 pp.

St. John, H., K.M. Nagata, and F.R. Ganders. 1983. A New Subspecies of Bidens (Asteraceae) from Maui. Lyonia, 2:2. 5 pp.

Tomich, P.Q. 1986. Mammals in Hawai`i: A synopsis and notational bibliography. Bishop Museum Press, Honolulu. 375 pp.

University of Hawaii, Pacific Cooperative Studies Unit. 2005. Threat reduction in the east Maui watershed. Proposal to U.S. Fish and Wildlife Service for 2005 funding.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999a. Manual of the Flowering Plants of Hawai`i. Bishop Mus. Spec. Publ., 97: 1-1918. University of Hawaii Press, Bishop Museum Press, Honolulu.

Wagner, W.L., M.M. Bruegmann, and J.Q.C. Lau. 1999b. Hawaiian vascular plants at risk:
1999. Bishop Mus. Occas. Pap. 60: 1-58.

Wagner, W.L. and D.R. Herbst. 2003. Electronic supplement to the manual of flowering plants of Hawai‘i, version 3.1. December 12, 2003. Available from the Internet. URL: http://rathbun.si.edu/botany/pacificislandbiodiversity/hawaiianflora/supplement.htm.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all 12-month petition findings, additions of species to the candidate list, removal of candidate species, and listing priority changes.

Approve: Acting _____ 11/16/05
Regional Director, Fish and Wildlife Service Date

_____

Concur: _____ 8/23/2006
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Date of annual review: September 19, 2005
Conducted by: Marie M. Bruegmann, Pacific Islands FWO
Plant Recovery Coordinator

Comments:
PIFWO Review

Reviewed by: Christa Russell Date: September 20, 2005
Plant Conservation Program Leader

Gina Shultz Date: October 14, 2005
Assistant Field Supervisor,
Endangered Species

Patrick Leonard Date: October 14, 2005
Field Supervisor